So, the name's Amanda. It's gonna be early Greek. I want to get two into it, but, um, I'm gonna go over the syllabus, some basic course information. We'll do a little lecture, lesson on the scientific method, and then a little space assessment activity. I sent out an email to you guys at some point this morning, I think. Uh, posted the preassessment yesterday. It will be open till the end of the week. I'll tell you more about it later, if you haven't done it. I know what's about, haven't seen it yet. That's fine. So, play some time. You're here, so you don't wear glasses. As far as I know, it's not gonna change. We go Mondays through Wednesdays, between Mondays and Wednesdays from this specific time block. So 450 to 605, uh, we might end a little earlier some days, um, and I'll usually stay after till about 615, 6 thirtyish. If you have questions from me afterwards. No one here is a science maker, right? Or at least no one here is an earth science maker. Second thing, I sent you an email a couple weeks ago saying you did not need to buy the textbook. We're purchasing, you know, spending money on it. That is for a... specific copy that I have that's available to you online. If you want a physical copy, go ahead and get it if you want it. I suggest you read it from the school's library. We already know, we don't know how to do that. to help with that. Most importantly, though, you're here, I need you a willingness to learn while you're in college, so obviously that's checked off. To think, hopefully, that helps too. And for this class in particular, you're gonna do a little bit of writing. Not a ton, but some... So going back to textbook real quick. Uh, textbook means Cohen's history of life, the 6th edition. Um, like I said, this is sort of a retail version that you'll find on their own website, uh, where they sell the book. I highly recommend not wasting $70 on it. I'm gonna read it again. Um, So, I got the book. I found a version of the textbook online because I was once a student. I'll tell you more about that shortly. Um, But I know some of the tricks I find some of these textbooks, and so I know a version of it that is uploaded onto Black Word, I'll show you how to navigate to it if you don't know already. Um, so you can use that for your assignments and whatnot. But like I said, if you want to look at a physical copy, I suggest renting it is about $40 or so. Um, I said, my name is Ade. Um, I'm an agile professor in art science. This is my first time teaching a class, because I'm also a master's student in the biology department. So, I'm a second year, answering my third semester, and the Chapeau can be my last year doing this as well. Um, before I get my degree. My office, officially speaking, now that in Earth science, is upstairs in a 211, um, it's there a couple of... It's a lot of fun, but the most reliable thing to do would be just to stay under class or hit me up by email. We can meet either there, or in my lab, in general, 234. Or we can do something very, fairly flexible. Agile professors are not required to have office hours. We're just sort of being supposed to be on call pretty much. So I'm on call for you whenever you're whenever you need it. Uh, so a little bit about me before I continue, uh, the actual formal stuff, because this is actually relevant to something down the road. So I'm from New Haven. I grew up here. My mom's from here. Um, and I went to call high school. And when you're from New Haven? Nice. So, yeah, I'm a local like you guys. I went to co-op, and then I went to Yale for a couple years, and when I went to Yale, I thought that I was going to graduate in four years, get all the fancy things that

come with that degree. Big name, accolades, all that stuff. That did not happen. I did 2.5 years there, and then realized I was severely unprepared for the stem stuff. took some time away. During that time away, I was working at the Beebunny Museum, um, working in the, uh, vertebrate collections wing. So that's the whole thing I'll get into at some point later down the road. And I kept doing that until 2019 when I got back into you to continue my degree. And oops, sorry, when... key barboard. But yeah, taking my degree. Um, and then sometimes you try again and things work out, sometimes you try again, they don't, and you gotta find out a way around it, and that's kind of what happened to me. 2020 happens and I had to leave. So that brought me to soccer a couple years later, continued here, and anytime I found birding, that would be relevant later on. You'll know for sure. Uh, and I also, last year, finally finished my bachelor's, uh, now I'm here working as a, yeah, I'll have to write here. I this time. Now I can do this, working as a graduate student, work, um, in the Berger Pentatology lab, and my thesis is on these creatures on the Jurassic period, which, again, I'll talk more about when we get to that relative section, of course. I don't want to spend too much on that because like I said, it'll be a lot. So in the meantime, other things I've done as a biologist, um, I've done some work on living organisms. So like I said, I found birds in 2020. Um, and that's kind of continued to stay with me till through to now. So in June of 2022, I went out to an island off the post of Maine to do some research with turns, which are these little jet fighter versions of seagulls, basically. And I spent about 2 weeks out there on an island smaller than the New Haven Green is, like the one block on the New Haven Green. And pretty much just observing these guys, and watching basically the kinds of wounds that they were giving their babies, and recording every single time a parent brought back, uh, like, which was shape. And we have to write down who was feeding who, what were they being fed, and how often this happens? And we have to stay in the blind for about 3 hours and record those interactions. And so you think, you know, bird watching, that's pretty cool. It's pretty tame old. people do that, right? But they don't tell you when you go into the field is that the birds don't like that you're there. So, I had this little experience. try talk a bit more. These two, I put a nest. very expensive. I never heard anything about it. Oh, yeah, that's right on the ground, right, probably where my time I was living, you know, unrest. No, they will not. O. So, they swing at you, like, they come close to your head, they go for your eyes, and some occasions. But what they really do is they just dive on you, make a sound, and they poop on you. Um, And this island is covered with about 6000 terms being adults specifically. And every pretty much every patch here has a nest there. So pretty much stepping anywhere is gonna get you attached. And that's how I spend my summers. We use that one summer. I haven't gone back letting it paid for it, but it was a good experience. I also woke up with snails in my shoes. So there's a little bit more about what scientists do and what I do specifically that makes me, I guess, picks to teach this class. So, like I said, I work in the Burdick and Entology lab over in Jennings with Dr. Jonathan Wanbaum. Um, and the lab goes out to Arizona every summer. So I've been out there 3 summers now, doing some fossil digging. You're using my VI shirt, gotta rep

my folks over there. And this was a picture specifically from last summer, meeting 2020, 2025. Um, I'm not gonna tell you too much about what's going on here, because again, there's an entire section of this class that will be dedicated to the things that I study. That's not me being narcissistic. It's me, specifically, wanting to emphasize that this particular period of time is actually very important for modern ecosystems, and so we will spend a whole week and a half covering it. I also, as a result of being scientists, get to go to conferences, and some of you will probably end up doing conference stuff as well, depending on what fields you're in. This was taken last fall in 2015. Sorry, 2025 in October. No, November. Wow. So, this was in Birmingham, England. You have to say Birmingham, which is apparently a stop. You say Birmingham. But this is the postar presented. about my thesis work. And this was the, I think, the 3rd conference I've been to. So, so far, all the schools die, my view, because that's the work of being graduated. I've been to Stony Brook. I've been to Birmingham this past spring. I went to a conference up in Hartford, and then another one in New York City. All present different projects, and meet with other scientists, will get a bit more into what that sort of thing entails and why that's relevant and important. Um, But I bring it up specifically because you'll care about this. Where am I going next? Well, in November, I'm going to Cleveland, just found out today. to prevent more of my work at the Society of Burb of Paleontology meeting. So I will be gone on November 11th. If you look at the syllabus or a calendar, you will see that that is the date of the up class. So I will not be there that day. There will be no class. There will be a virtual thing for you to do. But you won't come here that day. The other relevant thing, I found out last week, I'm going to go to South Africa for a conference. So I'll be gone on the 30th and the 1st. So that entire week, which will be the last full week of class. Um, And my trusted lab mate, Danielle Hill, will come and substitute for me for that. So you will have class while I'm gone. And hopefully you'll hear me well gone as well. But, uh, just know that we have one class off and these will be the specific dates that I will probably not be in, uh, you need to contact me at any points. Feel free to email me and I'll try and get back to you as soon as possible during those periods. So, more stuff around the class itself. So you'll see there's a lot of work that you have to do. Um, and it is a lot. At the same time, it's not that much. You'll understand, it kind of balances itself out. 70% of this class is gonna be based on the lecture, so stuff that we do here during these 75 minutes. I'll go through these points at some point in the next couple slides. The other 30% is based on this do your research concept. This class used to have a lab, and the current version does not, but I wanted to keep some component of sort of hands on investigative learning. So you have a couple big assignments that you'll do in throughout the semester. And I'll explain, like, those entail shortly as well. So, first, I'll stop by the big thing I'm most concerned about, the exams. There are be two of them. There'll be a midterm, there'll be a final, there'll be multiple choice and a short answer. Each one is worth 60 points, and collectively they are 20% of your grade in total. The exams will cover stuff that I talked about, specifically in class. There will be some stuff in the textbook that might come up as side facts, fun facts. I'll try to give some grace because again, there's a lot of

material that'll be covered. A lot of us in the book will not explicitly be this disgusting class, but it'll be relevant context. So I still want you to make sure you have some idea of it. But I will be fair in the questioning, uh, in so far as, um, what I'm closing you on, what I'd like for you to know. There's a whole lot in the textbook and we have 4 months and that's really not enough to grasp everything that's in the book. But as long as you have the core ideas, that's the real important part. So the final will be cumulative, and because of the way that a lot of this material is structured, it's going to move back to the things that we talked about in the 1st half of the semester. So, 1st app is gonna really want to lock in and pay attention. Because that's where all the important stuff is. Everything pretty much after midterm is just like fun stuff, but it's not fun unless you understand what's going on. So I'll give you some study guides. They won't necessarily be questioned by question. Here's what I've been asking, but I will give you topics that you should know. Like I said, I'm gonna try and give you some grace in how these tests and exams are structured, because again, I'm actually a student. I just finished the test taking portion of my life, and I don't want to be the person doing the thing I didn't like. That said, you also have to put it somewhere. So there'll be weekly quizzes. At the start of every class, not next week, but starting the week after that. I know we have no Monday that week, but it's Labor Day, but we'll start on that Wednesday. Um, There's 13 of those, the lowest one will be dropped. Each one were 10 points. They'll be short, they'll be only 10 minutes long. You have to make sure that you're here on those Mondays to take those exclusives because there will be no time for makeups. So once you come in, sit down, the place will be on your table. You do it, time's up, you move on to flight. Um, the quiz is covered, things that are talked about the previous week. Like I said, they'll be short, short answer, multiple choice, no more than 10 questions tops. When I hand them back to you, we'll probably want to heat those because some of those questions will probably be used on the exam. So honestly, the quizzes will be your most reliable study guide if you want to be questioned by question, by, uh, type of review. Perfect questions. These are basically gonna be your horns on this. So there's 13 sets of questions. Again, I'm gonna drop the lowest score. Collectively the worst 15s on your grade. They are meant to be short. They shouldn't take more than half an hour to do, and our tops, you get really invested in it. There is gonna be one that will be due next Monday. It hasn't been posted yet, but I will probably post it by the end of the day tomorrow and I'll give you more time to do them. Um, moving forward. Um, most of them will be, either struggle with choice questions, 3 to 5 of them, and or 2 short answer questions. Now, I was debating how to address this, but AI and generative AI specifically, I'm not going to sugarcoat it. I don't like it. And I say this to someone who could benefit from using it, theoretically, a lot. But the reason is twofold. Firstly, there are plenty of studies that actually show that it damages, uh, how you actually think and developing your critical thinking skills. The 2nd one is just, I just know, specifically for this topic, because paleontology and these sort of life science topics. AI does not do a good job. It actually synthesizing the information, but it'll often do is it will just sort of parse through, not even parse through it. It mostly people

summary of everything, and you can sometimes watch it, have a conversation with itself, has a sort of reasoning out what the right answer should be. And so you end up with a summary of just what everybody has said without a good answer. And I know for a fact, because I've seen it, I've tested it online. Um, when I say online, seeing on my, like, seeing social media posts where this happens, uh, these pages that will make up a story, um, and the citations that they use, they look legit. They're sighting people who I know work on that topic, but it will be on a paper in a year that did not exist because if that paper was real, I would have heard about it. Everybody, in the field of art, thought it. So, AI's not really trained at giving proper answers. It was just drands to give you something that looks like an answer. Um, and so I say all I have to say. I would have suggested why using it, especially, especially for this topic, if you're taking the free assessment, there's a lot of misconceptions that come around out there, about things writing to the history of life on Earth. And most people think they know things, and they really don't. And that's not your fault. It's the school system's fault, and a lot of historical things, which we'll get into throughout the class, as to why you don't know a lot of things, that I feel like everyone probably should. Not that it's necessarily critical information, but it's kind of important. If you don't know about yourself and where you came from, where are you gonna go? This applies to human history. This applies to our history as organisms. It applies to understanding where we live in. So I say all that to say, on this point, I would prefer that you handwrite your answers, take a screenshot of them, or picture, end upload that, if I ever ask you to upload a homework assignment, where you have to write something out. Either that or you can hand it to me in class, at the beginning of class. It's up to you. Either one is fine with me. That's just kind of how I want to approach this. So mostly how works, we'll scram with it. Like I said, this is my 1st time teaching a class. So, uh, that said, I am a son of 2 history teachers. So I got a I got some idea what I'm doing. Um, Without two times, dance, I got these things on blackboard. Um, I'm still figuring out how blackboard specifically works. I would use it as a student here, but the teacher's side is very different from the genicide, and I am, I'm working for it. So give me some grace for this 1st week and a half. I think we would. Um, But, yeah, these home persons, again, they're not meant to take too much time. Their best to sort of supplement. Your understanding, give you some background knowledge, because, again, the thing that I'm gonna focus on, is gonna be, like, bare bones, bare bones, and it'll be important for you to know that, but there's also gonna be some stuff from the book that I might expound upon. depending on what kind of tangent I feel like going on, quite frankly. And sometimes, like, going off on tangos. irrelevant tandos, of course. Um, so point being, read the textbook when you can. Look at the questions that you have to answer if you want us to shorten it. We're all students here. We know how we how we play the game. But I want you to take something out of this while you're playing the game. So they do your research assignments. This is actually the fun part, I think. We'll see. Um, like I said, this class used to have a lab. He was taught previously by the, um, chair of the Earth Science Department, who's on sabbatical now, but he's also on my visas committee. So he asked me if I'd

be going to teach this class. And so in looking at the new version that I got of this class without a lab, I was thinking, how am I going to teach these people about apostles and the science stuff? If they're not able to touch things or see things, um, beyond just looking out the board and looking at a book. So there's 3 separate assignments that I can ask you to sort of delve a bit more deeply than, um, than you might expect. I'll talk about each one in more detail as we get closer to the actual official assignment date. But the 1st one, basically, will be exploring a museum. You get a choice of whether you want to go to the Peabody Museum in person, or, uh, is it the American Museum of National History in New York, Virtually? Again, more details will be coming on those shortly because that'll be due first. Second one, you'll be in groups, you'll be presenting, actually, to me, to the rest of the bus. Um, a scene from downsour documentary, and specifically, um, some of the underlying science of the scene that you see. And then finally, we'll have a discussion, we'll have some discussion about this because we will cover human evolution. We'll talk about, and I'll expect you to write a short, and by short, I really need short, 3 to 5 page paper, discussing the evolution versus creationism debate, as it will be. And any outside resources will be provided on that board. So in a lot of these cases, I'm gonna give you things that are relevant for you to know if you want to do more than that. You're more than welcome to. Um, But that's kind of how it's gonna be structured. Like I said, I'll go into more detail about these as we get closer to me officially signing them to you. I just want to put them on your radar, that they are there for you to do. Great. But you really paramount. Um, this is a great chart. All this is gonna be is on the syllabus. I'll show you how to navigate to the city list, if anybody doesn't know, it's been posted. Um, I wanna save paper as much as I can, so I have not printed out copies, but if you like a printed copy, just let me know and I can do that for you. Um, let me know and I'll do it for you by the end of the day. Um, So this is the A range. If anyone is a freshman, you might be kind of shocked that there's no A buses. Colleges don't do A buses. I'm sorry. So you got the A range, E range, C, B, et cetera. Grains are rounded up to the nearest whole number. For those great averages that are on the borderline between 2 grades at the end of the semester, I'll take things like class participation into consideration, how much you're paying attention. low-key, how much you have your phone, high-key? Um, and various sort of things. Basically, if you put in an effort and I see you're trying, if you're on the border, I'll give you the higher grade. It's pretty simple. Like I said, I'm not here to punish anybody per se. I don't want to be that kind of teacher. Um, I would like to be here to be supportive of your learning journeys as you through this class. I know that sounds kind of pivey, but honestly, it's the best way to summarize that. So I do have a couple class expectations, like I said. First main thing. Um, I just don't... I get we're all adults. We got stuff going on. Um, and I respect that. So if you need to take a call or something, step out, you don't have to ask me. Um, instead I'll come back. Only time you can't really do that, uh, is during the zounds or during the quizzes. That will be considered cheating. Um, I'm not gonna put that into your phone, but, uh, If you need to use the phone before class, do it, you need to use it after class, wait till you hand in your exam, We're handing your quiz, then you step

out, do anything to do, come back. Um, so we know we started a little bit late, but attendance is important here. So, if you're over 15 minutes late and I understand life happens, but if you consistently stroke it, you know, fairly late, you're gonna get marked off. Um, So make up assignments. Um, I'm not gonna do too much of those, right, honestly, because I have my own stuff going to do, and, um, honestly, just announced some more work that you need to do if you just push things back. I'm sure allow you kind of already experienced some of that. So I'm not gonna do many makeup assignments, um, unless there's, you know, specific circumstances wherein that, you know, seems necessary and barrel. Like I said, I want to be fair about these sorts of things. Generally, just let me know if you're gonna be gone. Like, I've told you already. And um, yeah. We'll keep an honest with each other, and we'll work in each other on that. Um, as I said before, about the AI stuff, uh, and plagiarism and other things like that. Anything that's detected as plagiarism, GAI, anything that's not your own work, basically, will get an automatic zero. Um, it's not worthy to do that. Oftentimes, I can, a lot of people, especially go to the subject and tell when it's BS. And it's better off not to be us. It's better off to try and give them that answer than just not try at all and give a, you know, well, what seems like a right answer, and now I'm saying, I'm thinking, what the hell would this person write? Um, so yeah. the basketball respect, pretty lucky with a job. You know, I was playing music while you were kind of wandering in. So I want to keep it kind of cool and relaxed and whatnot. Because I like this topic, this topic is fun, and no one here is... seriously a science person, so to speak, but we're all capable of learning science. So I wanna approach approach it that way and kind of make sure that that atmosphere exists throughout the throughout the semester. Um, you know, the more fun you have with it, the more you're open to learning from the Sega Party, which is why you're here in the 1st place. I would think. Uh, you know, you never know what new things might inspire or spark something. Yeah. A couple of other physical things. If you need, um, special accommodation, uh, or disability or some other condition, I recommend connecting with the center of academic success and accessibility services. They pay cost us. If you've spoken the process and needed special accommodation for this class, I am happy to accommodate those. You have to make sure you register with them first, then they will contact me on your behalf. I'll sign off on it, and then we can make specific arrangements. Um, It doesn't need to be public information. You can come and speak to me privately, you can email me one on one conversation. Um, just wanna let you know that that's a resource that you have available to you. I believe they also have services for just general tutoring and other sorts of things. So if you feel like you're struggling with some of the stem concepts that will come up here, they should have some folks on board. who can help you with that. If you want, you know, outside, help. So, what are the goals of this course? What's the purpose of this class? Obviously, it's the fulfilling science requirement for a lot of you. Um, this is a class for non-mators. So no one here is taking it specifically for, um, you know, their their program of study. There is a version of this who, somehow, I convince you and you want to take a science, go version of this class that has the lab and whatnot. Um, and that'll be awkward in the

spring, and it'll be taught by Dr. Kodorcha. Second main thing is introduce you to the scientific method, if you're not familiar with it already. Basically, you need to understand kind of how we know things and why we know the things we do. There's a lot of misconceptions about how science works, and hopefully by the end of this course, you'll have a better idea, not a very clear idea of how science actually operates, particularly with this field, but it applies to pretty much all field of science. And through that, development appreciation for the earth we live on, which we already talked about that. So, it's enough yapping for me for a moment. I want to get it from you guys. You go around and do yourself. I'd like to know how, like, the pronouns, you're comfortable, uh, with your brain level, your computer, and, um, what your goal is, of course, why are you taking this class, and what do you hope to get out of it? And I'm gonna start with whether we are. Anyways, now, and I'm a junior stream, I'm usually transfers, really, and my major is math. Right. Yeah, I hope you, you know, on something different. All right, how's it with somebody else? Um, my name is Jalen. I'm born here, English Secondary Education. Um, and I just really like science, so... Nice. That's your major, by the way. Okay. I'm Finn, I'm a junior sport management major, and I'm taking this course just to understand a little bit more about the world. You know, on the mirror, on the mirror, on the mirror. before the 5 requirement, honestly. Yeah. My name is Legs and I have my business management major. taking as.. Um, Francesca, I'm a sophomore, sport manager, major. And my goal is to learn something, man. Oh, my name is baby. I'm so joggy, here, 2nd years, and I think, of course, you couldn't stop it, interesting. And at our oldest life, it's quite a lot, which is the most interesting... Appreciate the interest. I'm gonna close that door real quick. But we can go see the next person while I'm walking. Uh, my name is Caleb. Uh, almost communications and marketing major. I guess, learning something new. My name is Mason's. My name is Lisa Escuerdo. I need yours, communications, media, screen studies. In my goal for his course, it's like, it's learning more. You know, learn everything about life on Earth, and it's, in this street, it's universe, ancient life, pulses. I'm also taking this course, because it was required, you seem, like, not so bad, 'cause I also took her as nice in high school. Okay. Hi, I'm Nailene. I'm a sophomore, and I'm a international business. In, I'm sure I get less than you, this year? Okay. Okay. Congrats with problems. Um, no, I'm a 3rd year. I'm a communications major. marketing. And, um, we want to learn more about evolution. I'm Julia. I'm a 3rd year special education major. Um, I'm taking those Costco as it is a requirement, but also want to try my heart to, like, actually get something out of this horse. My name is Gavin. I'm a marketing major. I'm a sophomore, and I'm taking this class for my credits. Oh, my name is Colin. from a solidore business major, and I took this class to learn more about the art. My name's Marion. I'm a junior, and I make our communications, and my whole business course is just to learn something now. Okay, okay, go all around something, you might end, of course. At least fun. Will that thing be the thing I really want you to know? I know, but hopefully learn something from it. So, we all come from various backgrounds. We're very diverse room. you're not actually up. Um, I should state. This is kind of weird to have. I understand why it exists, but

historically, there's no reason for this to exist. I'll read it when we talk about how we live. So, we care what we get, we go, we go. So, the server foundation for history of life, including human origins, and pretty much the backgone of why we understand and how we understand all aspects of how life operates. So everyone will be required, regardless of what they're believing or not, we'll get into belief versus sort of bachelor knowledge later on. Yeah, everyone will be expected to learn, understand, but evolution, evolution of concepts actually say. A lot of people think they understand it, and they disagree with it based on their misunderstandings of it. Hopefully this verifies a lot of things. Um, And so we're using the scientific method as our approach to studying the history of life, and evolution is just essentially a product of this method. So, what is five? You're not getting grated on right or wrong answer. How do you demonize? It's how you understand the world around us. All right. Anything else? add to that? All right, I'll take my tomorrow. starts. I'm gonna say, it's, it's, it's, it's, it's, a scientist, a scientist that we learn, learn more about, learn more about things they discover. One more? That's a very close off. So, the working definition that we're gonna operate with, and most people hit it on the head pretty well. The use of observation, experimentation, calculation, to explain and understand how nature operates. For research purposes. Basically, this is the methodology we're trying to understand how they work. So, daily? Yes, we even said that exact time. So if science is the methodology, a process that we go through, there's steps to a process, right? So what are the steps of what's called a scientific method? Step one, you make an observation. I'd like to do a little exercise, going through half of this. Look out the window, make an observation. I'll take my two. Whoever can see out the window, nice screen. What do you observe? Anyone else? Uh, bushes, bushes. Anything about the bushes? They seem like we're getting maintained. What makes you think that? We're gonna keep running with that. So you made a good observation. You recognize that they have a specific shape. Now, I don't know if you can see this one over here. This big one by the corner. And observation was on this one versus that one. Oh, looks more kept up than the other one. All right. So we recognize now a problem in nature. Make sure the observation is valid. So that's kind of what you just did already. You've kind of done two and three. So you observe that they're differently shaped. You recognize in your head sort of intuitively, there's a problem. Why do they look differently? And then you did some comparisons between that one and that one. And now you've got hypothesis that one's being maintained, and the other's not. So you've already gone through 4 just intuitively. The next step would then be a test on hypothesis. Now, how would you go about testing a process that we've come up with so far? So the hypothesis is that, well, what is your hypothesis regarding these two bushes? Oh, yeah, yeah, like you said, um, one bush is getting more maintained than I go. All right, so how would you Tesla? Don't remember it. We could track this, bro, the one. I really started. Like, it's more, I broke it out more than the other one. We know that one. Okay. Anybody else, how do you observe? Okay. Oh, you're resuming by watching how their kids had a living, so... Simple observational experiments. So you just sit and watch. And then based on what you sit and watch, you can form a conclusion. So

your experiment might show that maybe they just, no one comes by, but they just happen to grow that way. Or maybe watch, as someone does come to Apple, and that not answers their question. Uh, and so those are, that sounds like the method works. It's really not that hard. Um, it's not that mystical, it's not some sort of unattainable, undoable thing. So, those are another example, kind of more close to home for me. So, in, you know, only doing college, let's say you're a member or something. You find something out of ground, it comes like this, and it's in this sort of rock. One of the questions you want to ask is, what kind of environment was this creature living in when it died? So that's already step one and two. He observed that the bone is there. You got a problem, where is it found where to die? Next up, we need to collect data and hypothesize. So, you observed, I'm cheating a little bit actually with this, but this picture doesn't quite show the texturing as well as the next one I'm gonna show you, but right around here, there's more pebbles and whatnot. And we know that these sorts of pebbles and sediment deposits happen in specific environmental contexts. So we can compare it to this one, this is a stream bed. So we have rocks and stuff being deposited by glowing water. Think of this one, we've got a bunch of rocks together with dirt between them. But this is the side of a mountain deposited by a mudslide. So you got two different hypotheses for two different environments. How do you tell the car? How do you figure out which is which? Well, tests would then be to do comparison. You go to study the environment that we're in right now, so let's assume that my bone was found right here, and a little bit further, we have these layers of rock. All these rocks around, there's sand in between the rocks, and most importantly, here, they're deposited in these layers. can see the different color bands going on there. Now, if you compare the sample that we are working at, to the known, a stream bed, and the known mudslide, we see. Yeah, go ahead. Is this, like, a ripple image of the? So these are supposed to be vertical. They're... It's sort of vertical sort of horizontal. It's kind of weird. I did not take these pictures quite often people, but conceptually, if they're in layers like this, this should be vertical. Or to be ranted. Oh, so that's like different layers of rock and gear bulber, the top layer of the rock. Something like that. Yeah. It was more similar to what that picture was showing the initial photo. Got you, Google. Or just, for the sake of this, assume it's up here, and we're looking at this entire event, as that environment. So if we're looking at these two, you can see the stones here. There is more angular, or less smooth, they're not as round. There's mud between these layers rather than sandstone, which you wouldn't really know from this picture, but you can tell when you touch them. Um, and there's no layering, there's no band name, whereas here, you can kind of see the banding. depositing these layers, this is what I'm saying, it's horizontally, because you have this layer up here, so it's causing this shadow to overhang. approach out by the overhang. Then you got sandwich in the rocks, and you have these round pebbles. So that, just by simple comparison, would tell you that this environment that we found the bone in is probably a stream or sand deposit. So, including your age, is that our bridge, which you'll learn what this is later on, our crop cousin here died near a river, and its bones were buried in sand and gravel from the riverbed. And

so, you continue doing morning work studies, you build up a project, thoroughly the veto system, or, you know, a ride picture, or whatever it is. And eventually you'll get to creating a experience about that. Now, the hierarchy, the scientific thought, is a relevant thing here. There's a couple different words that you see thrown around, and a lot of people don't quite understand. what they actually need and the practice of science. So we've been talking about hypothesis. hypothesis is a testable idea that's based on observations. So that's, I can't even, like, fully explain it any further. That's it. It's an idea that you got, and you can test that idea directly, in some way or another. Um, then you have laws and principles. Now, they're functionally equivalent when you get into the nitty-gritty of, like, scientific philosophy, people will argue about how they're actually different, but for our purposes, they're basically the same thing, which is just a quantifiable summary of observations under specific conditions. So basically just saying, If you have these conditions, this thing always happens. Um, you know, they become batteries in the clock. The clock will always take forward. It doesn't always happen, actually, but, you know, in concept, that's how it's supposed to work. Um, Or here's another one. Here's a more relevant one for science. I guess's. Um, you know, Newton's laws, right? You got, like, this equation here. Where 4 sequels, mass, tons acceleration, you've at least started the 2nd level, right? So, that's all Newton's 2nd law, you know, too, regarding ocean. And so, the idea is that, in a quantify, it goes down to the ground. An equation of something, whatever, um, and under... When you scale out a little bit more, you have to break down. But they work for specifics out of circumstances, and so when you have a bunch of different sets of circumstances, you can put laws together, and then explain why all of them work collectively in a theory. Which is a well tested explanation for how and why a phenomenon occurs. So when we say theory in common parlance, like, parlance, I just mean, like, if you just stop, um... You say it's just a theory, or I got a theory about this. What we're really saying is we have hypothesis. We haven't tested it. We got, like, some good intuition. It's a thought we got. Um, we haven't really tested yet. Whereas when we talk about a theory, for real, improve or in principle, whatever, um, Theories are effectively just, that is scientific fact. It's, like, the highest level, if you will, signing back. So, like, germ theory, gravitational theory, um, period of evolution, all of those are scientific theories, and we operate based on those theories. You don't wash your hands, you're gonna get sick, or you're gonna get somebody else sick. That's root in germ theory. There's actually a lot of people don't believe that. They're dumb, quite frankly. But, um, you know, they can go test it themselves. They want to, and enter an hospital. Gravity, gravitational theory, we all know that that exists. We can't just, they're not floating away here. If we jump up, we're gonna fall down, it's pretty simple. There's a lot of laws and principles that underlie, lie, gravity works. And so gravity, any gravitational theory, just explains the how and the why that gravity happens. Same thing for the scary evolution, and we will talk about that at length, starting next week, for how and while we know that things evolve. And the patterns that happen with evolution, that are testable, and observable, in part through the fossil record. So, we kind of went through all this Sunday process as, like, the sort of

linear steps, um, you know, the one through 6 steps. It's really more of a blowchart. So this is kind of the simplified version of how it works in practice. So, you know, we observe nature, we ask some questions about what we saw, develop a hypothesis, then you can go plan, conduct your investigation, How are you gonna figure this stuff out? Oh, are you gonna test it? And then ideally, you get enough good data that you can go back and analyze and interpret that data. Sometimes your experiment fails, you gotta go back to the drawing board and help a new hypothesis for some reason or another. And then you go back and do it again. Then maybe get to the point of interpreting your data. Then, once you've gotten good enough data, you can then move on to constructing some explanation from the others you know. Once you put those ideas together, you've made your case, you want to present it to somebody, it might be your boss, it might be your peers at a conference, you might be publishing something in a journal. If you work at, like, the ag station or something, it'll be for, like, the federal government to report on, you know, property yields or things that are affecting, um, the help of cow, whatever. whatever it might be. So you communicate your conclusions, so you're talking to people, depending on the venue, they're gonna give you some feedback. If you're trying to publish a paper, they're gonna kick your idea back if it's not good enough, I've had that happen to me before. Um, and so through this process, you're talking to people who might know more about the topic than you were from a different perspective than you. And so you kind of go back, rethink it, try it again, and you might get to the point where they think, all right, this checks out, this makes sense. Um, and then once that gets out into the world, now other people can observe nature through your observations, through your conclusions, and they'll take that, ask their own questions based on that, development hypotheses, and the cycle just kind of goes on and on, on, on. And that's kind of how science works in real life. The simple version. The real version of how science works in real life is more like this. where our symbol sort of 6 steps are kind of mixed in amongst all these sorts of things. I'm not gonna go for this entire shower with you. You can look at it yourself when you get some time. But you got sort of the expiration discovery portion, which is kind of where we're basically at. Uh, where what we've covered here. So there's different ways to make observations. Again, you can read papers, you can talk to other people. You just observe something outside on your own. Um, if you want me for a friend who came talking to you, then you get to the data gathering portion, uh, your hypothesis, your hypothesis, testing, et cetera, et cetera. You get your information, you determine your information. Okay, cool. Now you've gotten to the test through the testing ideas part. You want to take it to other people. Uh, medicine. You want to talk to a pharmaceutical company or whatever, because you discovered a new drug. You got all these things going on in here, with peer review, replication, argue, woman, copy of work. when I do your work, make sure it has to make sense. After colleagues, doctor of yours. At some point within all these, probably a multiple points within all these, you might get kicked back into the data collecting and testing idea for testing base for one or multiple reasons. And so you kind of go back and forth with all these things. And then maybe you might make your way out, go to

the benefits and outcome section. This is where it gets really tricky, 'cause now you're interacting with how your science interacts with society at large. Are you informing political policies? Are you addressing a societal issue or something? Are you helping to just generally build a knowledge base? Are you solving someone's problem? Um, depending on how these work and what your view is, you might get kicked back into here again, uh, into more data gathering. Or more community analysis speedback sections. Um, or they'll take it back to more exploration, more discovery, with, you know, new technologies, new problems that your science has brought up. Um, personal motivations or whatever else comes out of it. So this is kind of a, it's a whole network of things. And so science, all I'm trying to say is, Tyro is very messy. of the class, you should definitely be aware of that. As long as your explanation follows this, 'cause you'll see there's some variation in how these questions are framed. So, we got, let's see, kind of the... Okay, not like 20 minutes. So, we're getting towards the end of it. I take five minutes. It is your turn to do a little bit of what I actually do. So, you know, I'm gonna get any answers today, but I want you to, out loud, you can group up in the small groups, where you just talk and take a few ideas. I love the story of this slab of rock. Like I said, the most really correct answer that I myself have actually figured out, next week. But we gotta go to the process of figuring out ourselves first. So within the next 5 minutes, I want you to focus on this. You can write down some ideas, but what I really want to do is actually speak your ideas about, you know, the most kind of thing on it. So, Observations on this rock. What we got? I mean, those are trash. Maybe, like, something, it was, like, hardened in that, like, one point, it was, like, softer. Okay? Like, I don't think, 'cause, like, you can't really make a track in that solid rock. That, yeah, that was great. Anyone else? It looks like it might get everything lighter. Mm. Okay, so it looks like it's tomorrow. It had to have been soft at some point, you said, because you can't take footprints on hard rock. And it's, like, layered because of the crack down there, so, like, it, like, happened over time. It's a good watch. What else? Anything else? I mean, we can just do those raining, whenever it happens. Oh, no. I need some money, but, like you said, it would have had to be soft. Okay. You said raining specifically, um, frequently in the layers as well. So you're saying it's raining because it was raining because of, like, the mud and for it, eventually, like, the mud didn't have to dry out. Yeah, making it harder. So. Could the layers also be like pieces of it, like breaking off instead, like maybe from whatever the, the, um, like, the foot is, it could have been, like, a bigger, um, fossil. So, like, they could, like, I don't know, maybe it could have cracked it off. There you go, coming back up. I think it was raining because it has pebbles and stuff, a little imprint. It's kind of mixed between... between... the mud that's ring innocent and solid. And that explains... the creatures, set up... It's a cracks, sort of, things and a person ever presented. That's actually All right, so we made a bunch of observations. Now the idea is to construct an hypothesis of what is the story that's told by this rock. There is a multi-layer, you know, how to attend this story here. You can go ahead and think on that for a little while. Don't be able to see this when I send it out this evening. Um, I'm gonna pan over after this, but I'm gonna pan over to a couple

more logistical things real quick. while I still have them here. Yeah, we got picking this. So, uh, who's familiar or an actually including front staff? Who has not used blackboard before? Okay. A couple more people I know, so it's just you. Okay, that's fine. The black part of the platform, you're taking the class, you already, meeting within the last 2 days, they probably introduced you to blackboard, but I know it's kind of daunting to some people. So, when you put in a blackboard, you'll click, you'll see all your passes listed. This is sort of what the student view is. So even right now should just be seeing this stuff. So we are ESC 111. We already know that. So there's 3 sections up right now. We got the general going resources. So there'll be announcements. You all go out by email announcement this morning. You can click into there. You'll see them. I don't know how practical those actually are doing some of you. Um, so I might just regularly email people. Um, as a group. But the plus side, by doing it through here is that I can link you to things directly in blackboard. So for example, this pre-assessment that like you want to do by the end of the week. Um, That's linked here. Just click on that. And then you hit vegan, and then you will be able to do fill out the question there. Do not worry about this being graded. It's purely a completion grade. I just want to know where y'all are at with some of these ideas that we're gonna be talking about. Um, Thank you to those of you who've already done it. Yes. Um, how many questions? This one is 27 questions. It's not meant to take a lot of your time. I gave it a 40 minute limit. Most people have been able to do it so far within like 10, 15 minutes. Um, So it's just little 2nd type of thing. So just make sure you get it done. Easy completion, participation rate. Um, And yeah, if you falls a look here, uh, yeah, the new days always listen out when, so you can probably listen on the assignments. So, the 30th is, I think, Sunday, it's fine. Yeah, so by the end of Sunday, I'd like to see everyone who've done this. You find the syllabus here, like I said, um, this I think should be open automatically or it'll download a copy onto your computer. And then the textbook is here. The media, we can see how large it is. This is, again, online version. If you want a physical version, I have one copy that I can tentatively lend you, but it's not mine. So if you do actually ask for it, you want to use it, please be very careful with it, because after trying, if you don't, that's on my ass. So, there's that. And then, We'll be sort of going through this by week. Uh, so we're gonna be one right now, so we're gonna be, we'll be in the week before. Right now, again, this is just a pre-assessment. At the end of each class, I will try as soon as possible to upload each lecture, and anything that I think is relevant for you to know about. Um, and we'll go week by week through there. Um, so by the time here tonight or tomorrow, more previously, if I done tomorrow night, he'll have a copy of today's lecture. Um, electric wise, and the homework, uh, for next week, for next Monday, will be up. Like, I'll try and get them out sooner. Um, I know I want why you did get some time for it. especially to read through some of the stuff that's thrown into answer the questions. Um, so, we officially have 10 minutes left. Like I said, I plan on sticking around after class till, you know, 630 at the latest. So if you have questions, when I come up and ask me, now it's time to do that. reassessment you have a computer on I recommend now. And if you don't want to do either of those, um, you can

meditate on the scone. So that's gonna it forvail. Thank you for coming on time. Uh, and I will be on Monday at same time. I can go and find your name, I sign, just make sure I know... How are you Oh, well... Yeah. Oh, no, you're dumb. You're fine. Yeah. Yes. Yes, I saw that. Um, I did respond to you. Um, so, the, like I said, the learning how to enable blackboard it, um... Yeah, I'll read all three said, just in, if you want to. Yeah.